REDUCED SOURNESS EMULSION

FIELD OF THE INVENTION

[0001] The present invention is directed to a microbiologically stable emulsion that does not have a distinct sour taste. More particularly, this invention is directed to a water-in-oil-in-water (w/o/w) emulsion wherein at least about 50% by weight of the total amount of acidulant utilized in the emulsion is present in the primary phase. The w/o/w emulsion of this invention can, unexpectedly, be light, low-fat or non-fat and formulated to have an acceptable dressing viscosity without delivering a sour taste to the consumer.

BACKGROUND OF THE INVENTION

[0002] Edible water-in-oil-in-water emulsions (w/o/w) comprising an external water phase and a dispersed phase having water-in-oil have been made. Such w/o/w emulsions are often desired because low or reduced fat formulations can be made to have rheologies that mimic the rheology and other fat related characteristics of substantially higher fat formulations.

[0003] When less fat is employed in any emulsion, especially an edible emulsion, water and water soluble thickening agents are typically used to replace the fat and more acidulant is required in order to minimize microbiological safety concerns generally associated with a composition having a high water content. Unfortunately, when an emulsion is made with reduced fat, high water content and high levels of acidulant, the resulting emulsion tends to have an acidic or sour taste that is not pleasing to the consumer. In view of this, many of the efforts made to formulate edible emulsions that taste good and are low in fat are unsuccessful.

[0004] It is of increasing interest to develop an edible emulsion that is microbiologically stable, light, low-fat or non-fat, of acceptable viscosity and suitable to deliver a pleasing (non-sour) taste to the consumer. This invention, therefore, is directed to a reduced sourness w/o/w emulsion wherein at least about 50% by weight of the total amount of acidulant utilized in the emulsion is present in the primary phase.

Additional Information

[0005] Efforts have been disclosed for making emulsions. In U.S. Pat. No. 4,933,192, hydratable powders which form w/o/w emulsions are described.

[0006] Other efforts have been disclosed for making emulsions. In U.S. Pat. No. 5,683,737, mayonnaise and dressing compositions having a glucono-delta-lactone preservative system are disclosed.

[0007] Still other efforts have been disclosed for making emulsions. In European Patent Application Nos. EP 0 997 074 A1 and EP 0 997 075 A1, edible emulsions are described.

[0008] None of the information above describes a w/o/w emulsion wherein at least about 50% by weight of the total acidulant utilized in the w/o/w emulsion is present in the primary phase.

SUMMARY OF THE INVENTION

[0009] In a first aspect, the present invention is directed to a w/o/w emulsion comprising:

[0010] (a) a primary phase comprising a water-in-oil emulsion; and

[0011] (b) an external aqueous phase,

[0012] the w/o/w emulsion has an amount of water in the primary phase (W1) and in the external aqueous phase (W2), and an amount of acidulant in the primary phase (A1) and in the external aqueous phase (A2) wherein W1>W2 and A1>A2.

[0013] In a second aspect, the present invention is directed to a multiple emulsion comprising the w/o/w emulsion of the first aspect of this invention, including the w/o/w emulsion in oil.

[0014] In a third aspect, the present invention is directed to a food product comprising the w/o/w emulsion or multiple emulsion of the present invention.

[0015] In a fourth aspect, the present invention is directed to a method for making the w/o/w emulsion of the first aspect of this invention.

[0016] A w/o/w emulsion, as used herein, is defined to mean a water-in-oil-in-water emulsion with the internal water-in-oil emulsion being within or the primary phase and the external aqueous phase being the external continuous phase.

[0017] Primary phase, as used herein, means the internal phase of the w/o/w emulsion that can comprise, consist essentially of or consist of the water-in-oil emulsion described.

[0018] Stable means microbiologically stable (no mold growth) and no flavor loss for at least about nine (9) months, and preferably, for at least about ten (10) months when kept in a covered (i.e., sealed) package at about ambient temperature.

[0019] Reduced sourness means tasting less sour than conventional reduced fat (<65%) edible oil-in-water emulsions.

[0020] Amount of acidulant means actual weight of 100 percent acidulant, not an acidulant solution.

[0021] Emulsions that are light and low-fat are meant to mean the same, and that is, between about 10.^{0}% to about 35.0% by weight oil, based on total weight of the emulsion. Fat free emulsions are defined to mean emulsions with less than about 6.0% by weight oil. Oil means comprising triglycerides, and especially, those that are liquids at ambient temperature.

[0022] Viscosity, as used herein means deformation properties obtained with a Haake Rheometer equipped with a set of concentric, bob-in-cup, cylinders (3 mm gap) wherein the bob employed has a diameter of 30.4 mm, the cup has a diameter of 42 mm, and shearing occurs by ramping cylinder oscillation at a rate from 0 to 135 reciprocal seconds at ambient temperature. Viscosity reported is taken at a shear rate of 10 reciprocal seconds.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0023] There is no limitation with respect to the oil used in the primary phase of the w/o/w emulsion of the present invention as long as the oil is suitable for human consump-